

WHAT IS CLAIMED IS:

- 1 1. A method of operating a system to process image data
2 for storage and retrieval, the method comprising the steps
3 of:
4 analyzing said image data to be encoded to
5 determine, for each image represented by the image data, a
6 level of encoding complexity;
7 encoding said image data according to a first
8 encoding format to generate first encoded image data; and
9 storing with the first encoded image data
10 encoding complexity level information indicating at least
11 one determined level of encoding complexity associated with
12 the first encoded image data.
- 1 2. The method of claim 1, further comprising the step of:
2 retrieving the first encoded image data and
3 encoding complexity level information from the storage
4 device;
5 decoding the first encoded image data to generate
6 decoded image data;
7 determining at least one encoding parameter to be
8 used to re-encode the decoded image data as a function of
9 the retrieved encoding complexity level information; and
10 re-encoding the generated decoded image data
11 using the encoding parameter determined as a function of
12 the retrieved encoding complexity level information.

1 3. The method of claim 1, further comprising the steps
2 of:

3 performing an automated image content analysis
4 operation on at least one image represented by said image
5 data; and

6 storing, with the first encoded image data, image
7 content description information generated by performing
8 said content analysis operation.

1 4. The method of claim 3, further comprising the steps
2 of:

3 receiving image content information from a user
4 of the system; and

5 storing, with the first encoded image data and
6 the image content description information generated by
7 performing said content analysis operation, the image
8 content description information received from the system
9 user.

1 5. The method of claim 3 further comprising the steps of:
2 retrieving the first encoded image data and image
3 content description information from the storage device;

4 decoding the first encoded image data to generate
5 decoded image data;

6 determining at least one encoding parameter to be
7 used to re-encode the decoded image data as a function of
8 the retrieved image content description information; and

9 re-encoding the generated decoded image data
10 using the encoding parameter determined as a function of
11 the retrieved image content description information.

1 6. The method of claim 1, further comprising the step of:
2 selecting, based on the determined encoding
3 complexity level information, an image represented by the
4 first encoded image data, to be viewed after decoding.

1 7. The method of claim 6, further comprising the step of:
2 decoding the encoded image data representing the
3 selected image to generate decoded image data; and
4 displaying the decoded selected image on a
5 display device.

1 8. The method of claim 7, wherein said step of decoding
2 the encoded image data is performed as part of said
3 encoding step.

1 9. The method of claim 1, further comprising:
2 selecting the first encoding format from a
3 plurality of supported encoding formats, as a function of
4 the determined level of encoding complexity.

1 10. The method of claim 9, further comprising the step of:
2 receiving data storage limitation information;
3 and
4 wherein the step of selecting the first encoding
5 format is also performed as a function of the received data
6 storage limitation information.

1 11. The method of claim 1, further comprising the step of:
2 retrieving the first encoded image data and
3 encoding complexity level information; and

4 using the retrieved encoding complexity level
5 information to identify at least one data format suitable
6 for distributing an image represented by the first encoded
7 image data, the identified data format being different from
8 the first encoding format.

1 12. The method of claim 11, further comprising the step
2 of:

3 presenting to a user of the system a plurality of
4 data formats suitable for distributing the image
5 represented by the first encoded image data, the identified
6 data format being one of said plurality of presented data
7 formats;

8 receiving from the user information selecting one
9 of the presented data formats for use in distributing the
10 image; and

11 converting at least a portion of the first
12 encoded image data from the first encoding format to the
13 user selected data format.

1 13. The method of claim 1, wherein the step of analyzing
2 image data to be encoded to determine, for each image
3 represented by the image data, a level of encoding
4 complexity includes:

5 generating an activity measure for at least one
6 image represented by said image data.

1 14. The method of claim 1, wherein the step of analyzing
2 image data to be encoded to determine, for each image
3 represented by the image data, a level of encoding
4 complexity includes:

generating a measure of the luminance variance
throughout at least one image represented by said image
data.

15. The method of claim 1, wherein the step of analyzing
image data to be encoded to determine, for each image
represented by the image data, a level of encoding
complexity includes:

generating a measure of the chrominance variance
throughout at least one image represented by said image
data.

16. The method of claim 1, wherein the step of analyzing
image data to be encoded to determine, for each image
represented by the image data, a level of encoding
complexity includes:

generating a measure of the motion between at
least two complete frames, each frame corresponding to a
different image.

17. The method of claim 1, further comprising:

generating true motion vectors indicating motion
between a first image and a second image;

generating in accordance with the first encoding
format, as part of said step of encoding said image data, a
set of motion vectors indicating motion between said first
image and said second image, said set of motion vectors
including at least some motion vectors which are different
from said true motion vectors; and

10 storing the true motion vectors with the first
11 encoded image data which includes said set of motion
12 vectors.

1 18. A method of operating a system to process image data
2 for storage and retrieval, the method comprising the steps
3 of:

4 performing an automated scene analysis operation
5 on said image data to be encoded to generate image content
6 information;

7 encoding said image data according to a first
8 encoding format to generate first encoded image data; and
9 storing the generated image content information
10 in a file with the first encoded image data.

1 19. The method of claim 18, further comprising:

2 receiving additional image content information
3 from a user of the system;

4 storing the additional image content information
5 in said file with the first encoded image data;

6 retrieving from storage the stored first encoded
7 image data, said generated content information, and said
8 additional content information;

9 selecting a second encoding format to be used for
10 outputting images represented by said first encoded image
11 data as a function of at least one of said generated
12 content information and said additional content
13 information; and

14 re-encoding said first encoded image data to said
15 second encoding format to generate second encoded image
16 data.

1 20. The method of claim 19, wherein the generated image
2 content information indicates the pictorial content of an
3 image.

1 21. The method of claim 20, wherein the additional image
2 content information includes a description of the pictorial
3 content of at least one image.

1 22. The method of claim 20, wherein the step of
2 re-encoding said first encoded image data includes:
3 decoding said first encoded image data to
4 generate decoded image data; and
5 re-encoding said first encoded image data using
6 at least one encoding parameter generated as a function of
7 said generated image content information.

1 23. A system for processing image data for storage and
2 retrieval purposes, the system comprising:
3 a scene analysis module for performing scene
4 analysis on said image data to generate image content
5 information;
6 means for receiving additional image content
7 information from a user of the system;
8 an encoder for encoding said image data according
9 to a first encoding format to generate first encoded image
10 data; and
11 a storage device for storing the first encoded
12 image data, said generated image content information and
13 said additional image content information in a file.

1 24. The system of claim 23, further comprising:

2 means for retrieving from storage the stored
3 first encoded image data, said generated content
4 information, and said additional content information;

5 means for selecting, as a function of at least
6 one of said generated content information and said
7 additional content information, a second encoding format to
8 be used for outputting images represented by said first
9 encoded image data; and

10 a second encoder for re-encoding said first
11 encoded image data to said second encoding format to
12 generate second encoded image data.

1 25. A system for processing data including at least one of
2 image data and audio data, the system comprising:

3 an analysis module for analyzing data to be
4 encoded and to assign one of a plurality of encoding levels
5 of complexity to the data to be encoded;

6 an encoder for generating encoded data from said
7 data to be encoded;

8 a file wrapper module for incorporating an
9 encoding complexity level identifier indicating the
10 encoding complexity level assigned to said data to be
11 encoded and said encoded data into a single file; and

12 a data storage device for storing said single
13 file.

1 26. The system of claim 25, wherein the encoded data is
2 encoded image data, the system further comprising:

3 a preview module coupled to said encoder and said
4 analysis module for displaying a subset of the images

5 represented by encoded data generated by said encoder, the
6 displayed images being selected for display as a function
7 of encoding complexity level information associated with
8 said encoded data.

1 27. The system of claim 20, wherein the preview module
2 selects images represented by image data assigned a higher
3 than average encoding complexity level for display.

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